RIB-TYPE CEMENT CONCRETE ROAD SURFACE SLAB AND CONSTRUCTIVE METHOD THEREOF

The present invention relates to a cement concrete road surface slab, and to a method for forming slots of rib net on the road bed when this slab is constructed. The present invention belongs to the art of a road engineering technique.

With the rapid development of modern road traffic, high speed automobiles have a higher and higher requirement to the roads. There is an increasingly wide use of the cement concrete road due to its advantages such as high strength, good smoothness, long lifetime, and so on. In the past, the method for forming a cement concrete road surface slab is to pave a layer of a cement concrete having a uniform thickness on the compacted road bed. To form this cement concrete road surface slab, a huge amount of cement concrete is required, which results in large investment and high cost. Therefore, lessening the amount of cement concrete used is a focused problem of the department of road construction, without affecting the requirement of designing strength.

The object of the present invention is to provide a cement concrete road surface slab which not only meets the designing strength of the road surface slab, but also reduces the amount of the cement concrete used, and a method for forming such road slab.

The cement concrete road surface slab provided by the present invention is characterized by forming a protruding rib net integrated into the road surface slab at the back of the cement concrete road surface slab. The connection portion between the rib net and the road surface slab has an arc shape. The protruding height of the rib net may be designed, depending on the strength requirement of the road surface slab. This height is generally 0.5-4 folds as much as the thickness of the road surface layer. In addition, the rib net of this road surface slab may be quadrate, rectangular, and rhombic and so on.

A method for constructing this cement concrete road surface slab is firstly to form net (grid) concave slots on the road bed, on which the cement concrete road surface will be paved. Two methods are provided as follows:

1. Base materials such as limes, cements, clays, sands and so on are paved on the road bed. The rib net mould made of hard plastics or rubber is placed on the smoothly paved base materials before the base materials are compacted, and then compacted with

a compactor. When the base materials are compacted, the rib net mould is also inlayed into the base materials. After the compacting operation is complete, the rib net mould will be taken out of the base materials, i.e. concave slots of rib net are formed on the road bed.

2. Rib net mould is installed on the compacting roller of a road roller. When the road roller press and mill the base materials, concave slots of rib net are formed on the road bed.

Thereafter, following a conventional operation process, the cement concrete is paved on the road bed configured with concave slots of rib net to form rib-type cement-concrete road surface slab.

Figures 1 and 2 are one example of the present invention. Figure 1 is a transverse section view along A---A portion of the rib-type cement-concrete road surface. In this figure, 1 represents side slope, 2 represents road bed, 3 represents transverse rib, 4 represents surface course, and 5 represents longitudinal rib.

Figure 2 is a schematic view of concave slots of rib net on the road bed of rib-type cement-concrete road surface. In this figure, 6 represents concave slots of rib net.

In this example, the ribs on cement-concrete road surface slab are arranged in a checker form.

The bottom of the surface course and two sides and bottom of the protruding rib of a cement concrete road surface slab formed by using the present technical solution are tightly connected with the road bed. Therefore, both stress and deformation of the road slab are uniform. The consumption of cement concrete in the present invention can be saved by 1/3-1/4 and thus reduce the cost of road surface slab, without affecting the design strength of pavement, compared to forming a equally thick cement concrete road surface slab.

Claims

1. A cement concrete road surface slab, characterized in that a protruding rib net integrated into the road surface slab is formed at the back of the cement concrete road surface slab, wherein a connection portion between the rib net and the slab has an arc shape.

2. A method of constructing the cement concrete road surface slab of claim 1, characterized in that concave slots of rib net are firstly constructed on a road bed, then cement concrete is paved on the road bed configured with the concave slots of rib net according to a conventional construction process.

3. The method of constructing the cement concrete road surface slab of claim 2, characterized in that the method for forming the concave slots of rib net on the road bed comprises the steps of:

placing a prefabricated rib net mould on smoothly paved base materials;

inlaying the rib net mould into the base materials, when the base materials are compacted by a compactor;

after the compacting process complete, taking the rib net mould out of the base materials to construct the concave slots of rib net on the road bed; and

paving cement concrete on the road bed configured with the concave slots of rib net according to a conventional construction process.

4. The method of constructing the cement concrete road surface slab of claim 2, characterized in that the method for forming the concave slots of rib net on the road bed comprises the steps of:

installing rib net mould on the compacting roller of a road roller;

forming concave slots of rib net on the road bed when compacting the base materials; and

paving cement concrete on the road bed configured with concave slots of rib net according to a conventional construction process.

Abstract

This invention provides a cement-concrete road surface slab with protruding rib net at its back. The present invention also provides a method of forming concave slots of rib net on the road bed using a rib net mould, and then paving the cement-concrete road surface slab. With this method, the consumption of cement concrete can be saved by 1/3-1/4 without affecting the design strength of pavement.

〔19〕中华人民共和国专利局

〔11〕公开号 CN 1052519A

〔12〕发明专利申请公开说明书

〔21〕申请号 90108968.0

〔51〕Int.Cl⁵
E01C 5/06

〔43〕公开日 1991年6月26日

〔22〕申请日 90.11.5

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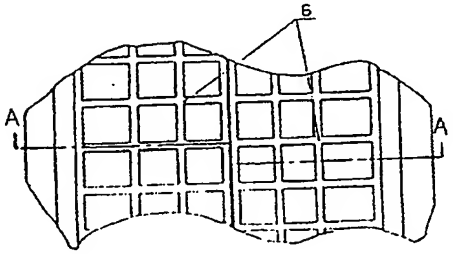
E01C 7/14

说明书页数: 2 附图页数: 1

〔54〕发明名称 肋条式水泥砼路面面板及构造方法

〔57〕摘要

本发明提供了一种面层底部设置有凸起的网格状肋条的水泥砼路面面板，以及用网格状肋条模具在道路基层上构造出网格状肋条凹沟槽，然后再铺筑水泥砼路面的施工方法。采用本发明可在保证路面设计强度的基础上，可节省1/3～1/4的水泥砼用量。



权　利　要　求　书

1、一种水泥砼路面面板，其特征在于在水泥砼路面面板的底部，设置有与路面面板为一体的凸起的网格状肋条，网格状肋条与面板的结合处为圆弧。

2、如权利要求1所述的水泥砼路面面板的构筑方法，其特征在于，先在道路基层上构造出网格状肋条凹沟槽，然后再按一般常规施工方法，在有网格状肋条凹沟槽的道路基层上铺筑水泥砼。

3、如权利要求2所述的水泥砼路面面板的构造方法，其特征在于所述的在道路基层上构造网格状肋条凹沟槽的方法是，将予制好的网格状肋条模具，放置在摊铺平整的道路基层材料上，在用压实机械将基层材料压实的同时，将网格状肋条模具嵌压在基层材料中，在压实作业完毕后，将网格状肋条模具从基层材料中取出，即在道路基层上构造出网格状肋条凹沟槽，然后再按一般常规施工方法在有网格状肋条凹沟槽的道路基层上铺筑水泥砼。

4、如权利要求2所述的水泥砼路面面板的施工方法，其特征在于所述的在道路基层上构造网格状肋条凹沟槽的方法是，在压路机的滚筒上安装上网格状肋条模具，在对基层材料进行压实作业时，即在道路基层上构造出网格状肋条凹沟槽，然后再按一般常规施工方法，在有网格状肋条凹沟槽的道路基层上铺筑水泥砼。

说　　明　　书

肋条式水泥砼路面面板及构造方法

本发明涉及一种水泥砼路面面板，以及在构筑这种面板时，在道路基层上构造网格状肋板沟槽的方法。本发明属于公路工程技术领域。

随着现代公路交通的飞速发度，高速行驶的汽车对行驶道路的要求越来越高。水泥砼路面由于具有强度高、平整度好，使用寿命长等一系列优点，得到了日益广泛的采用。以往构筑水泥砼路面面板的方法是，在压实成型的道路基层上，摊铺一层等厚度的水泥砼。构筑这种水泥砼路面面板，水泥砼用量大，致使造成投资多，造价高。因此如何在保证设计强度要求的前提下，减少水泥砼的用量，是公路施工部门十分关注的问题之一。

本发明的目的，在于提供一种既可保证路面面板的设计强度，又可节省水泥砼用量的水泥砼路面面路板，以及构筑这种路面面板的方法。

本发明所提供的水泥砼路面面板的特征是，在水泥砼路面面板的底部，设置有与路面面板为一体的凸起的网格状肋条。网格状肋条与路面面板的结合处为圆弧形。网格状肋条凸起的高度，可根据路面面板的强度要求设计。其高度一般为路面面层厚度的0.5～4倍。这种路面面板的肋条网格，可以是方形的，矩形的、三角形或菱形等形状的。

这种水泥砼路面面板的施工方法是：首先在欲铺筑水泥砼路面的道路基层上构造出网格状凹沟槽。其方法有如下两种：

1、先将石灰、水泥、粘土、沙砾等基层材料摊铺在道路基层上，在进行压实作业之前，将用硬塑料或橡胶等材料制成的网格状条模具，放置在摊铺平整的基层材料之上，然后用压实机械压实，在将基层材料压实的同时，将网格状肋条模具也嵌压在基层材料中。在压实作业完毕后，将网格状肋条模具从基层材料中取出，即在道路基层上构造成网格状肋条凹沟槽。

2、在压路机的碾压滚筒上，安装上网格状肋条模具，在压路机对基层材料碾压时，既在道路基层上碾压出格状肋条凹沟槽。

然后按常规施工方法，在构造有网格状肋条凹沟槽的道路基层上铺筑水泥砼，即形成了肋条式水泥砼路面面板。

图1～2是本发明的一个实施例。图1是肋条式水泥砼路面A－－A处的横剖

面图。图中1边坡、2基层、3横肋条、4面层、5纵肋条。

图2是肋条式水泥砼路面基层上网格状肋条凹沟槽示意图。图中：6网格状肋条沟槽。

本实施例中水泥砼路面面板上的肋条呈方格形状布置。

采用本技术方案构筑的水泥砼路面面板，其面层底部及凸起的肋条两侧及底部，均与道路基层紧密相连接，因此路面面板的受力及变形均匀。与构筑等厚度的水泥砼路面面板相比在保证路面面板设计强度的基础上，可节省水泥砼用量1／3～1／4，从而降低了路面面板的造价。

说　明　书　附　图

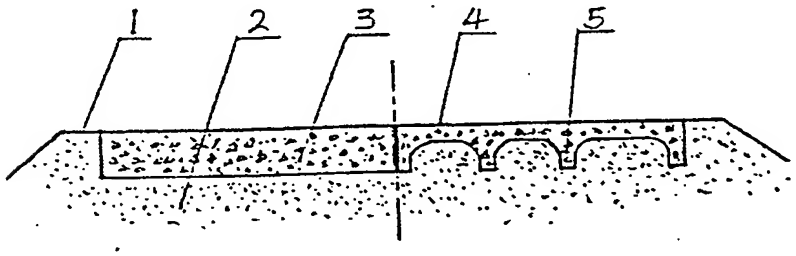


图 1

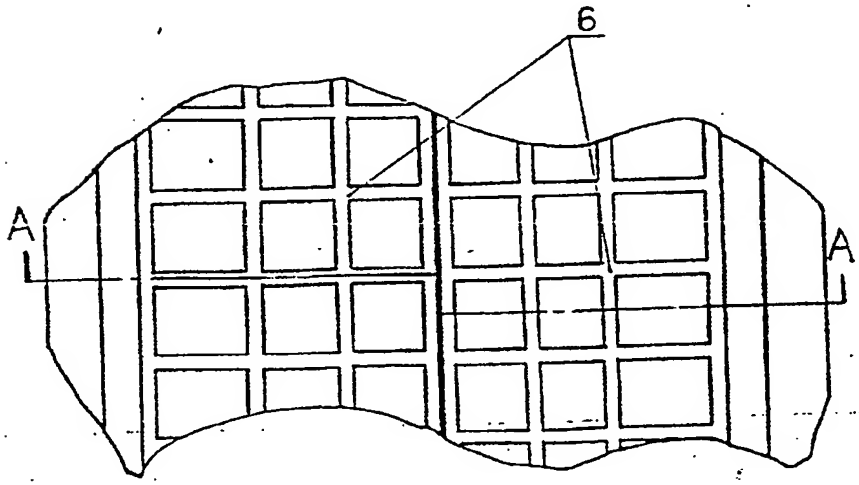


图 2